GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.

OFFICE: TRIBUNE BUILDING, NEW YORK.

Conducted by . . . . . Professor C. S. SARGENT.

ENTERED AS SECOND-CLASS MATTER AT THE POST OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, MAY 11, 1892.

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The American Hawthorns.

OUR American forests are rich in Hawthorns, nearly one-third of the forty species which are now known being found within the territory of the United States. They are scattered from Newfoundland to Vancouver Island and to Florida and Texas, and every state and territory, with the exception of Arizona, contains its representative of the genus. They are more common, however, in the east than in the west, and in the number of species and individuals the south is richer than the north. They abound in the country between the Red River and the Trinity, which must be considered the head-quarters of the genus, as more species occur there than in any other region of similar extent, while individuals of several species grow in greater abundance and luxuriance there than in any other part of the country.

The American Hawthorns have long puzzled students of trees, and botanists have regarded them as difficult subjects. But it is the botanists themselves, rather than the peculiarities of these trees, which have made them hard to understand, and the chief difficulties in elucidating the different species are literary, and not morphological. For many of the species having been early introduced into the gardens of Europe, there developed under cultivation, numerous more or less distinct forms which were described as species, and often as genera, different names being sometimes given to the same cultivated form. This making of species went on for a century in nearly every country of Europe, while in America botanists were hardly less active in burying these unfortunate plants under a load of almost inextricable synonyms. It is, nevertheless, possible to obtain a correct idea of the species if the student will remember that two Hawthorn-plants raised from seeds taken from the same tree may be and probably will look very unlike one another and their parent; that individuals of most of the species vary in the form of the leaves, in the amount and character of the hairs which cover them, in the presence and absence and in the size and character of the glands which are often found on their leaves and calyx-lobes, in the size and shape of the stipules, which vary on different parts of the same individual, in the number of styles and of the nutlets of the fruit, which is sometimes round and sometimes pear-shaped, and red or yellow in the same species. The student of trees must remember, too, that climate and environment modify individuals, and that when a species has a north and south range of two thousand miles an individual at the north may look very different from one which has grown in the extreme south. If all these facts are remembered, a patient observer able to keep his mind clear of the pitfalls in synonymy dug by Moench and Willdenow, by Aiton and Du Mont de Courset, and by Rœmer, Wenzig and Kaleniczenko, and with abundant opportunities for studying in their native forests the different species in all parts of the territory which they inhabit may be able at the end of twenty years, perhaps, to recognize the different species and find characters for separating them, although botanists will probably never agree whether certain forms shall be called species or varieties.

The American Hawthorns fall naturally into two groups; the first contains those species which produce large many-flowered compound corymbs, and the second those species with simple few-flowered corymbs. The species of the first of these principal divisions may be divided into three groups; the first with black or blue fruit, the second with large scarlet or yellow fruit, and the third with minute scarlet fruit, while the species of the second of the principal divisions fall naturally into two groups, the first with red or greenish yellow fruit, and the second with large globose red fruit. These divisions being established, there is nothing better than the shape of the leaves, in these plants a variable and therefore unsatisfactory character, by which to distinguish the species.

It is not our purpose to describe here all the American Hawthorns in detail, but rather to call attention to the value of the genus as a good subject for study, promising our readers that they will find in it much interest and excellent opportunities for intellectual development, and to remind cultivators that some of the species are beautiful and desirable garden-plants still too little known or appreciated in their native land.

From a gardener's standpoint the most desirable of our Hawthorns is Cratægus Crus-galli, the Cockspur Thorn, which is perhaps better known in cultivation than any of the other species. Its hardiness, the beauty of its lustrous foliage, the lateness of its flowering-time, all recommend it. The head of this tree, which is sometimes round, with pendulous branches, and sometimes flat-topped, with spreading horizontal branches, is always handsome and interesting. The autumn color of the leaves is not surpassed by that of any of the species, and the abundant fruit hangs on the branches without changing color throughout the winter. The Cockspur Thorn is little subject to fungal diseases, which disfigure many Hawthorns, and it is usually long-lived in cultivation. The long thorns which arm its rigid branches make it a good hedge-plant, and early in this century it was much used for this purpose in some of the eastern states. In the form of its leaves the Cockspur Thorn is one of the most variable of our species, and in addition to the varieties which are found growing wild in different parts of the country others have appeared in European gardens, where this species has been cultivated for nearly two centuries, and where it is now more often seen than any other American Hawthorn.

Of the broad-corymbed large-fruited species the White Thorn is, next to the Cockspur, the best garden-plant. This tree has been considered a variety of the Scarlet Thorn and also as a species. Perhaps the latter view is the most sensible, as the two plants differ in size and habit, in the size of their flowers and the time of their appearance, in the size of the fruit and the length of time this remains on the branches, as well as in the pubescence

which covers the under surface of the leaves and the young branchlets. Cratægus mollis is the name the White Thorn must bear if it is considered worthy of specific distinction. It is the largest of the Hawthorns of the northern states, and one of the most widely distributed of the American species growing from the shores of Massachusetts Bay to Missouri and through Arkansas to Texas and the mountains of northern Mexico. It is one of the common species in the states west of the Mississippi River, growing to its greatest size in Texas. In cultivation the White Thorn is a beautiful plant, of rapid growth and good habit, conspicuous in winter for the whiteness of its branches and for the number of its large chestnut-brown shining spires. The flowers, with the exception of those of one species of the southern states, are the largest produced by any member of the genus. The leaves are large and of a lively green, and the fruit, which is as large as that of a small crab-apple, is brilliant scarlet with a conspicuous bloom; unfortunately, it falls as soon as it ripens. Some idea of the beauty of this tree when its flowers are open can be obtained from the illustration on page 221 of this issue. It has been made from a photograph of a tree grown in New England, for which we are indebted to Dr. William H. Rollins, of Boston.

The Washington Thorn of the small-fruited species is the best known in gardens; it is the Cratægus cordata of botanists, an inhabitant of the southern Appalachian region, and rather a rare plant in its native wilds. It is, however, better known in gardens than any of the other species of the southern states, and its vernacular name is due to the fact that early in the century it was introduced into eastern Pennsylvania as a hedge-plant from the neighborhood of the city of Washington. It is a handsome small tree with an oblong round top, bright triangular leaves brilliant in autumn, and small flowers which open later than those of any of the other species, and bright scarlet fruit the size of peas, which hang on the branches until the leaves appear the following spring. The Washington Thorn is free from serious fungal diseases and is always a satisfactory tree in cultivation. Fifty years ago it was more often planted than it is at present.

An interesting garden-plant, also, is Cratægus Douglasii, the only representative of the genus in the coast-region of the north-west and in California. In the warm climate of Washington and Oregon this tree often attains the height of forty feet and forms a trunk a foot and a half in diameter. The leaves are large and lustrous, the flowers are small but very abundant, and the fruit, which is black, falls in early autumn as soon as it ripens. It is one of the few trees of western America which are absolutely hardy and satisfactory on the eastern edge of the continent, where it thrives as far north as Nova Scotia.

Some of the most beautiful of our Hawthorns were once cultivated, but have long been lost from gardens, and a few have never been cultivated at all. Cratægus flava, a native of the maritime regions of the south Atlantic and Gulf states, where it grows in the arid sandy soil of the Pine-barrens, was first described a century ago from plants cultivated in England at that time and the source of endless confusion in the literature of the genus, probably long ago disappeared from gardens, although the name still appears in most garden lists. It is a beautiful small tree, with a narrow round-topped head of graceful pendulous branches, large flowers in two or three-flowered corymbs, and pear-shaped greenish yellow fruit. The Parsley Haw, another inhabitant of the southern states, and beautiful from the shape of its finely divided leaves, was once cultivated in English gardens, from which it has, however, long ago disappeared. But the most beautiful of the southern Hawthorns are still unknown in gardens; these are the Pomette Bleue, of the Acadians of Louisiana, and the Summer Haw, of South Carolina and the Gulf states. The first of these, Cratægus brachyacantha, although it is one of the largest and most distinct of the whole genus, strangely escaped the knowledge of botanists until very recently, although it was collected long ago without flowers and fruit. It is the most local of all our species, growing only in the extreme western part of Louisiana, where it borders in broad groves, small low prairies, and in the adjacent portions of Texas. It is perhaps the largest of the genus, sometimes rising to the height of fifty feet, with a tall straight trunk and slender branches, which form a beautiful compact round head. The leaves are not large, but they are bright and shining, and the flowers, which are comparatively small, are produced in many-flowered clusters, which completely cover the branches. The fruit is large and abundant and is bright blue—a color otherwise unknown in the fruit of Cratægus. Unfortunately, it falls in early autumn. There is not a more beautiful small tree in the southern states than this, and it is to be hoped that the attempts made a few years ago by the authorities of the Arnold Arboretum to introduce it into the temperate countries of Europe will prove successful. In the Arboretum itself the seedling-plants have not proved hardy.

That no recorded attempt has been made to cultivate Cratægus æstivalis, the May Haw, and that no figure of this beautiful plant has ever been published, are remarkable facts, although botanists have known of its existence for more than a century. Unlike our other Hawthorns, it flowers before the leaves appear, in February or March; the flowers are larger than those of any other species, and the fruit is larger and of better flavor and quality than that produced by any other Cratægus. It is as large as a medium-sized crab-apple, bright red with pale spots, and ripens in May. Pomologists might well devote some attention to this tree, for excellent jellies can be made from the fruit, which is gathered in large quantities for this purpose and is sometimes sold in the markets of the towns of western Louisiana, where this tree is most abundant and best known.

We have only briefly mentioned a few of the species which seem best deserving the attention of gardeners, although among the others are several handsome plants which are hardly known to the cultivators of this generation.

The Love of Nature.—III.

WE have endeavored to show that the true love of nature means a broad receptiveness of eye and mind which does not need striking scenery to delight it, but finds beauty and interest in the quietest, simplest scenes, and which does not need constant change to stimulate it, but loves familiar things better and better as they grow more and more familiar. Every one realizes that more kinds of art appeal to its real lover than to the ordinary observer, and that striking spectacular kinds are not exalted by him above all others. All the greatest artists in the world did not paint Sistine ceilings or Venetian triumphs, and some of the world's most famous masterpieces measure only a couple of spans and do not show a single vivid note of color.

So it is with nature and its masterpieces. The finest compositions wrought with mountain-peaks and deep ravines are not really more beautiful or wonderful than those which can be wrought with a gray boulder, a Pine-tree and a carpet of Moss and Ferns; the most splendid panoramic background is not more enchanting than may be a foreground of flowery meadow with a middle distance of woodland, and no background at all except the luminous sky.

Some persons, of course, are born with a true and deep love for nature. But even in them, we think, this love does not develop very early in life. In the majority of cases it seems to have been gradually developed rather than spontaneously felt. And while no one not born with a poet's soul can ever learn to feel Nature's beauties as a Corot or a Wordsworth did, any one can learn to see these beauties, unless his mind is hopelessly sluggish and prosaic.

How, then, can such knowledge be acquired? One way is the landscape-painter's way. The practice of painting, even in the most untrained and amateurish fashion, is, if

sincerely pursued, an excellent help toward the development of a love for nature. If an intelligent young girl would spend an hour a day during a single summer faithfully trying to set down in paint what she sees in nature—now a flower or a branch, now a bit of sunset-sky, a corner of a hedge-row or a little stretch of river-bank—she would find at the end of the season that she had gained new eyes. She would see a thousand things she had never seen before—find beauty in many that before had seemed ugly, and realize the difference between merely "liking" nature and truly appreciating it. It would not matter if all her studies were failures and were torn up in disgust as fast as they were finished. She would have attained a great end, achieved a real success; for she would have enlarged her own powers of enjoyment in a way that would sweeten and dignify all the rest of her life. A vast amount of amateur sketching is done in this country every summer, but we fear it is not often done in the spirit and manner we have indicated. The aim is to produce pretty pictures, not to cultivate the painter's own intelligence. And while the aim generally remains unattained, intelligence is scarcely increased; for as the excellence of the sketch has been the ruling motive, a subject has most often been chosen because it was easy to do, not because it was exceptionally interesting in itself.

Of course, a thorough scientific acquaintance with natural things need not precede a deep and full enjoyment of them. Indeed, great devotion to scientific study occasionally seems, as in the self-confessed case of Darwin, to kill the æsthetic sense. But this is not because science and a love of beauty are necessarily at variance. It is simply because the powers of the human mind are limited, and intense absorption in one aspect of nature may leave no room in life for constant consideration of another side.

To know the names of plants is often thought by the uninstructed to be the aim and end of botanical study. But a mere acquaintance with these names is not knowledge in the true sense. It is only a necessary step in the gathering of knowledge. Names of plants are important just as names of persons are. We must discover the name of a stranger if we are to identify him, to understand his place in society and the world at large, to remember his individuality, and gain more information about him by speaking of him to others. And so with the name of a plant.

In studying botany we learn first such facts as we naturally know about human beings. We learn what they are, how they live and grow, what is meant by their nearer or more distant degrees of relationship, how and why they are grouped in what may be called families, clans, communities and nations. And as those who have studied them most profoundly have discovered that their relationships depend upon their structure, we must study on these lines to gain any knowledge that is satisfying.

Surprising are the minute and subtle beauties that will reveal themselves when a plant is studied as well as merely contemplated; and surprising are the interesting facts that will reveal themselves when its special place in the plant-world and its relationship to other plants are understood. This enlargement of knowledge deepens interest, and, if æsthetic susceptibility exists at all, greatly widens the scope of enjoyment. To a person who knows nothing of botany, the trees and flowers which he calls familiar are like attractive faces which we meet day after day in the street but cannot call by name and have not the privilege of speaking to. To one who has some knowledge of it, familiar plants are like friends about whom everything is known, and new ones are like attractive strangers with whom we can instantly make acquaintance. The same distinction is true in regard to the larger and more permanent features of a landscape. These features present themselves as one picture to those who know nothing of geological science and quite another and a much more profoundly interesting one to those who have some true idea of the constitution and history of the solid crust of the earth.

The true lover of nature, said William Blake, can "see a world in a grain of sand and heaven in a wild flower." But such a power of seeing is not given to many persons at their birth. Eyes are of very little use to most of us unless we have learned how to use them. And the best way to learn how to use our eyes is not to cast them about idly, even though we may take pleasure in so doing, but to discover what there is to be seen in the world and then to try to perceive it all. The wise man not only knows nature better than the ignorant man; he also sees it very differently; and in this difference lies a vast unlikeness in the amount of pleasure that is gathered by their eyes. But to be wise in this sense one need not be learned in the scientific sense. One need only devote a fraction of his time to a careful study of the natural sciences so as to have a rudimentary knowledge as a solid basis for the superstructure which imagination can be trusted to rear. Any person who possesses the rudiments of a love for nature, whose soul is naturally open to the influences of beauty, will surely go on, by means of personal observation, to a stage of development where his appreciation of and affection for natural objects will grow with his ever-increasing knowledge of the laws and processes which are the subjects of scientific study.

THE forests of India offer a most instructive object-lesson for Americans. The waste of valuable wood by the axe and by fire was almost as reckless in that country as in our own until the Government began to take measures to protect it. The first efforts did not strike at the root of the trouble, and therefore much time was wasted until Doctor (now Sir Dietrich) Brandis began working in the right direction. The central idea of Sir Dietrich was that the state should manage the forests for the distinct purpose of securing a revenue, and under his administration marked progress was made at once. Our own forests should be preserved for other reasons than merely to insure a lasting timber-supply; but, with the example of India before us, where the forests now yield a revenue of two million of dollars a year, there seems no reason why our own public forests, if properly managed by the Government, should not pay for their protection. It will be a great gain for this country when we learn that forest-lands can be wisely cut over without destroying the forests.

These reflections are suggested by the annual report of the Forest Department of the Madras Presidency for the official year, 1890–91, which contains the usual record of work accomplished in the year. It appears that the area of reserved forest increased 360 square miles during the year, and that the total area of reserved forests and reserved lands in the southern circle amounted to 8,701 square miles. Some of the difficulties which the forest-administration in India has to encounter appear in the fact that it had to bring 3,990 cases of prosecution for trespass and injury to the forest. Most of these were offences for unauthorized felling of wood and for grazing without permission. Conviction was secured in eighty per cent. of the cases prosecuted. Fires, as is always the case in Indian forests, did much damage, one area of 2,700 acres alone having been burnt over. The report states that before the inauguration of the forest-system "it is not too much to assert that the more valuable timbers—that is, the Teak and Rosewood—were being exterminated in all the accessible forest-areas in the southern districts—first, for want of protection, and later on by heavy fellings of all mature trees, without any proper system of care for reproduction and insufficient protection"—a state of affairs which may be seen in every park of North America. The revenue derived from the working of the forests in Madras during the year was the highest on record, and the authorities believe that it will increase largely in the future as the system becomes more fully developed and fairly established.

IN the May number of the *American Journal of Science and Arts* Professor William H. Brewer prints an interesting

and sympathetic obituary notice of our late associate, Mr. Sereno Watson, in which, discussing the causes which influenced his career and enabled him to obtain a distinguished position among men of science, Professor Brewer remarks that, "had he died twenty years after graduation, the world would have known little of him, and his classmates would have considered his life a failure. That long period was, however, years of diversified preparation which fitted him to bring to his chosen work most thoroughly trained powers, and gave him a wide range of knowledge drawn from the study of several sciences, and a personal knowledge of the aspects of the flora of many widely separated parts of the country. The reserve which characterized him in college, and which lasted through life, left him all the more free to prosecute his chosen work without the distractions of society. But his reticence was not that of the misanthrope; he endeared himself to all who were brought in close relations with him. This was strikingly shown in the trials and hardships of camp life, as among the inner circles of his friends in the university and in the few families which had the privilege of his acquaintance."

Spring in the New Jersey Pines.

ALMOST all of the flowers in the Pines are tardy in their appearance this spring. A few, however, greeted us as usual despite the cold. Our charming Pyxie (Pyxidanthera barbulata) was full of bloom early in April, and the Trailing Arbutus was redolent with sweetness at the same time. Although these shy woodland treasures are now past their prime, yet we still find lingering sprays of both, which have been kept in check by the cold.

The Wind Anemone is in flower in damp places. Its pretty blossoms are pinkish purple on the outside, while the inner surface is pure white. In grassy places we find violets innumerable, from deepest blue down to light shades of purple and lilac. All these are varieties of Viola cucullata, and they have leaves as varied in form as the flowers are in color. Some have palmate leaves, others broad heart-shaped ones, while many are nearly round. The Arrow-leaved Violet (V. sagittata) is also abundant and almost as variable in the form of its leaves as V. cucullata, but the color of the flower is a more constant blue in this species. The little white Violets, V. lanceolata and V. blanda, are here too, giving us a sweet perfume with their delicate beauty. The Bird's-foot Violet (V. pedata) is just coming into bloom. This is our finest species. The handsome flowers are large and brilliant, in varying shades of blue and purple, down to the purest white, while some have the petals striped and blotched. The leaves are pretty too, but not quite as handsome as those of the Larkspur-leaved Violet (V. delphinifolia) whose habitat is on the western prairies. It is established in my wild garden, however, and flourishes as well as any of its kindred. The leaves are longer and larger and more finely dissected than those of V. pedata, and the clumps of foliage are pretty all summer. The flowers are deep blue and do not vary in color, and are small compared with the Bird's-foot Violet. Of the leafy stemmed violets, I have found only V. canina in the Pines, unless we can establish the fact that V. tricolor is indigenous. This species I have seen in old neglected fields, but never where the ground had not at some time been cultivated.

The little heath-like Hudsonia tomentosa is beginning to light up the gray sandy places with its bright yellow flowers. Before it blossoms, its downy, sharp-pointed, grayish leaves so blend with the sand that it is scarcely discernible a few feet distant, but during May it makes the waste places gay with color. Helonias bullata is very late coming into flower this spring. For twenty years or more I have not failed to find it in blossom in April, and now it is only in bud with the flower-scape only five or six inches in height. But the Golden-club (Orontium aquaticum) was not to be kept back by the cold. It was in flower by the middle of April, but the leaves were seared by frost while the flowers were not hurt at all. The leaves of this plant when perfect are very handsome; they are large and present a deep green, rich, velvety upper surface that sheds water, while the under surface is very smooth and of a light color, and always wet or moist. Arnica nudicaulis is in flower, each stalk surmounted with several heads of deep orange flowers—very pretty and attractive; and the modest little plantain-leaved Everlasting was in bloom early in April, and still continues to flower in dense patches along the roadsides and in the barrens in company with its more showy neighbor the Arnica.

The false Dandelion (Pyrrhopappus Carolinianus) is growing here on the roadsides and in the fields. I noticed it for the first time three or four years ago. It is supposed to be a more southern plant, but it seems to be perfectly at home here. Its bright yellow flowers are quite pretty on a branching stem—solitary on each branch. The stem is a foot or more in height. Potentilla Canadensis was blooming in April, and its variety, simplex, is just coming into flower. Are not these two plants dissimilar enough to be classed as distinct species? P. Canadensis always creeps, while its so-called variety is erect and stout, with more vivid green leaves than those of the type. The flowers in both are similar, and this is the only justification for considering one a variety of the other.

Only a few flowering shrubs are in bloom as yet. Cassandra calyculata has been very full of blossoms, but is on the wane now. Leucothoe racemosa is in flower, and Amelanchier Canadensis, with its many varieties, is everywhere in the damp barrens. Some have pure white flowers, and others pink and rosy like Apple-blossoms. The red fruit of the swamp Maple is strung thickly along the branchlets, and is very showy and handsome, and the yellow flowers of the Sassafras make a lovely combination of color. The red berries of last year still cling to the Hollies and to Ilex verticillata, while beneath our feet are the spicy Wintergreen berries and the paler red of the Partridge berries. The shining black fruit of the Inkberry (Ilex glabra) is abundant, and also clusters of the purplish black fruit of Smilax. Negundo, with its delicate drooping clusters of flowers, is handsome now, and blossoms of Sweet-gum still linger as well as those of the Tupelo.

Vineland, N. J. *Mary Treat.*

Plant Notes.

Some Recent Portraits.

IN the April number of the *Botanical Magazine* are figures of Lilium primulinum (t. 7227), a plant recently imported by Messrs. Hugh Low & Co. from the Shan states in Upper Burma. Its nearest allies are L. Nepalense and L. Neilgherrense. It produces a stiff erect glabrous stem three or four feet tall, with scattered lanceolate, sessile glossy bright green leaves three or four inches long, and about three flowers arranged in a corymb or umbel on long-nodding pedicels, each with a large lanceolate leaf at the middle. The perianth is open, funnel-shaped, pale yellow without spots, and tinted on the outer surface with green while young, and is five or six inches long; Habenaria longecalcarata (t. 7226), one of the long-spurred species of India, characterized by the large flowers and the great length of its spurs; Cirrhopetalum ornatissimum (t. 7229), a native of Assam and the eastern Himalayas, a plant which much resembles C. Collettii, previously figured in the magazine (t. 7198), although differing from that species in the form of the pseudo-bulbs and in the erect scape springing from the side of the pseudo-bulb, and not pendulous and developed from the young growths before the new pseudo-bulbs are formed, as is the case with the second species. It is rather as botanical curiosities than as ornaments of the garden that these plants will be cultivated. Streptocarpus Galpini (t. 7230), already described in our columns; Beaufortia sparsa (t. 7231), a brilliantly flowered shrub with a curious inflorescence, which presents the appearance of a spike the axis of which is produced above into leafy branches, but which in reality is the result of a consecutive series of closely contiguous leaves being reduced to bracts and producing each in its axil a flower, the whole being hidden by the bundles of pendulous stamens. In B. sparsa there are about five of these bundles in each flower, each bundle consisting of a thread about an inch long bearing about eight long-stalked diverging filaments, of which two are opposite and placed considerably below the five that terminate the thread. B. sparsa was discovered late in the last century by Archibald Menzies, the surgeon and naturalist of Vancouver in his voyage of discovery, on the shores of King George's Sound, in south-western Australia, where the town of Albany now stands, a locality well known for its rare and beautiful

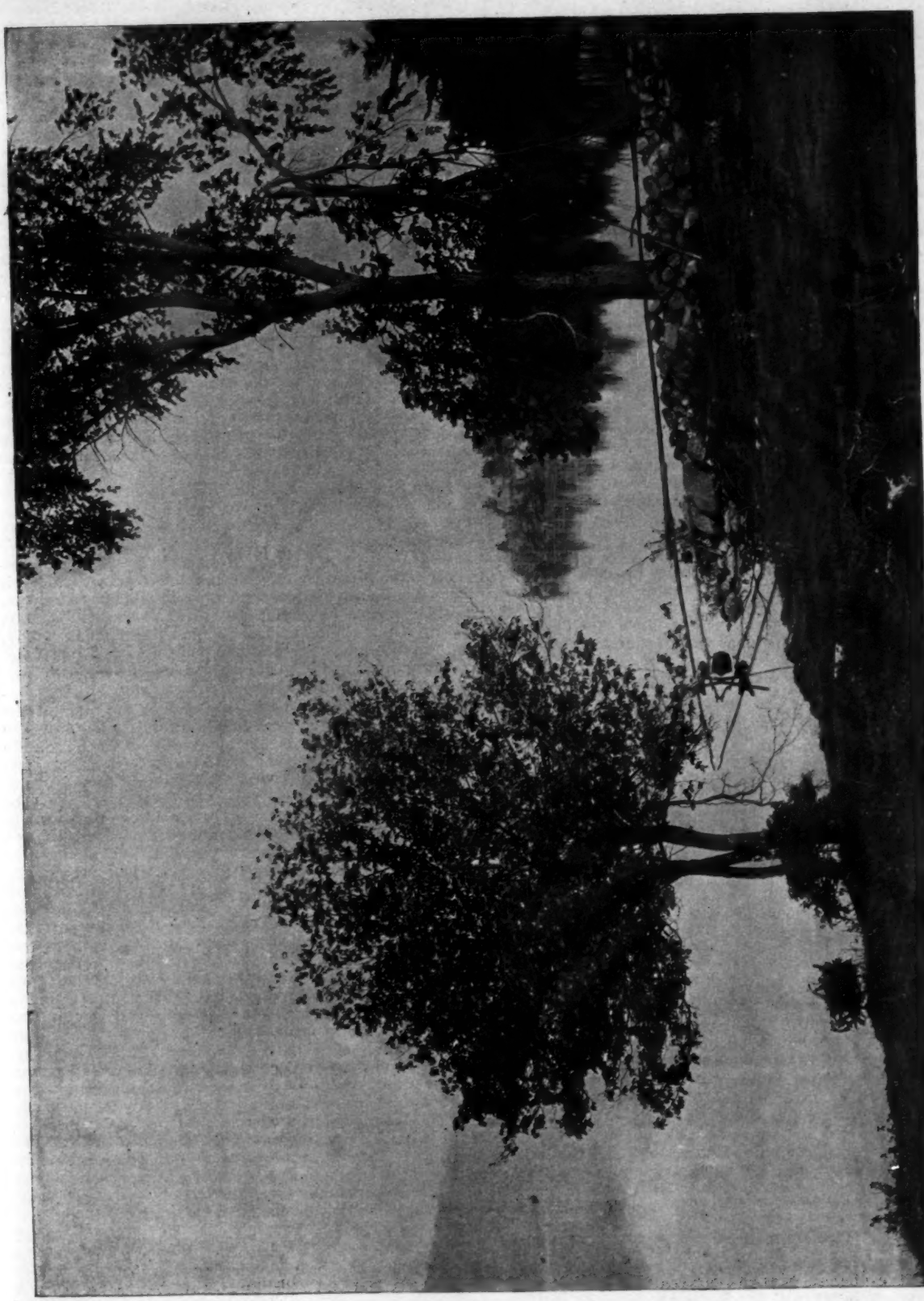

Fig. 40.—The White Thorn (Crataegus mollis) in New England.—See page 217.

plants, and known as the only habitat of the Australian insectiverous plant, Cephalotus follicularis. It has been known in cultivation for half a century, although, like many other plants of its class, it is now much less frequently seen in gardens than it deserves.

Foreign Correspondence.

London Letter.

New Cattleyas.—On March 4th last Messrs. F. Sander & Co. offered for sale a Cattleya which they had named C. Victoria Regina, and described in the sale catalogue as a new species, with flowers five inches across and as many as eight or nine on each spike. Their color was said to be glossy deep rosy red, with blotches of crimson and purple, paler on the margins, which were wavy; the lip crimson, with a white tube. The pseudo-bulbs, foliage and general appearance of the plants in the sale-rooms strongly suggested C. amethystoglossa, now called a variety of C. guttata, but Messrs. Sander & Co. say there are good differences between their new one and any of the known forms of C. guttata, and, also, that the plant is found wild in a locality far removed from that where C. amethystoglossa comes from. The plants have not yet flowered, but, judging by a specimen in the Kew collection, they ought to prove easy to manage. A considerable number of plants were sold at the sale. This week the Messrs. Linden, of Brussels, advertise the sale of another new Cattleya for April 29th, which they have called C. Alexandræ. A description of the plant by Mr. Rolfe is published in this week's *Gardeners' Chronicle*, from which it would seem that this also is a near ally of C. amethystoglossa, pseudo-bulbs and leaves resembling that plant very closely. Its most remarkable character, however, is the length of the peduncle or flower-stalk, which is from fifteen to eighteen inches long and bears from six to ten flowers. The color of the flowers is described as being similar to those of Lælia grandis tenebrosa. I shall not be surprised if, when this and Messrs. Sander & Co.'s plant flower, they prove to be one and the same.

Cypripedium Exul.—This plant was described in the *Gardeners' Chronicle* last year by Mr. H. Ridley, Director of the Botanical Department in the Straits Settlements, from specimens collected in Assam. It was, he said, a very distinct variety, both in form and coloring, of C. insigne. Plants of it were sent to England, and one of them was exhibited in flower last Tuesday by Mr. R. I. Measures. This differed so markedly from what we know as C. insigne that it was considered expedient to elevate the plant to the rank of a species, which has been accordingly done by Mr. O'Brien, whose description, with a drawing of the flower, has been published in the last *Gardeners' Chronicle*. Mr. O'Brien points out the resemblance in the leaves and form of the flowers of C. Exul to C. Druryi, which, however, has yellow flowers, while those of C. Exul are colored like C. insigne, var. Maulei. The plant was imported in large quantities into England in 1891 and sold as the Siam form of C. insigne. It is distinct, but not attractive in color, and is not likely to become a favorite except, perhaps, with those who have the Cypripedium mania.

Odontoglossum Wendlandianum.—This is a new Sanderian introduction, of which a plant in flower received a first-class certificate from the Royal Horticultural Society on Tuesday last. It is in the way of O. niveum or O. blandum, some suggesting that it is a cross between the latter and O. Andersonianum. The sepals and petals are narrow, elegant, creamy white with chestnut blotches, the lip white spotted with rose-purple. It is a pretty little Orchid, quite equal to the best forms of O. blandum.

Cattleya Burberryana, a cross between C. intricata and C. superba, received an award of merit, as also did a hybrid Cattleya from Messrs. J. Veitch & Sons, named C. Philo, a hybrid between C. iricolor and C. Mossiæ.

Rhododendron racemosum.—An exhibit of more than ordinary interest at the last meeting of the Royal Horticultural Society was a basket filled with plants in flower of a charming little Rhododendron with the name at the head of this paragraph. The plants did not exceed six inches in height, and they were not unlike ordinary Box in habit and foliage. The flowers, which were arranged in loose heads four inches across, were three-fourths of an inch across, shallowly campanulate, colored pale rose, with a deeper margin. They were slightly fragrant and altogether delightful little bouquets. The plants were from the Coombe Wood nurseries of Messrs. J. Veitch & Sons, where they had been growing in the open ground all winter, and had been lifted only a few days before they were shown in flower. From this it would appear that this tiny Rhododendron is hardy near London, and a most promising little plant for the garden. The name, however, may possibly be wrong. R. racemosum was described by Franchet from specimens collected by Delavay in Yun-nan. There is a type specimen of it in the Kew herbarium, and this differs in several important points from the plant called R. racemosum by Veitch, the scales on the stem being different, the flowers smaller, the pedicels shorter and the leaves larger and thicker than those of the plants shown in flower. Furthermore, there are specimens at Kew of R. parvifolium which agree very well with Messrs. Veitchs' plant, and which are of Chinese origin. But we have also in cultivation a plant called R. parvifolium which is poor in comparison with Messrs. Veitchs' new introduction; in fact, is scarcely worth a place in the garden. R. parvifolium is, however, found in Siberia as well as in China, and it may vary considerably, as do many of the Rhododendrons. We have at Kew a plant called R. racemosum which was certainly raised from seeds collected by Delavay, and this looks like that of Messrs. Veitch. But, whatever its name may be, Messrs. Veitch & Sons are to be congratulated on having a new Rhododendron distinct in character, pretty, and full of promise as a hardy plant. This is the second to flower in England of the new Chinese Rhododendrons. Of course, it obtained a first-class certificate.

Hyacinths.—The monopoly of the bulb trade by the Dutch is probably due to cheap labor as well as to the natural advantages which the peculiar character of the soil and lowness of the country afford. Custom, too, has, no doubt, much to do with it. We buy bulbs from Holland for the same reason as we buy knives from Sheffield. But first-rate bulbs, equal to the best Dutch, can be grown in England. We know this with respect to Daffodils and Tulips, and we may now add Hyacinths. For the last five years Kew has made the experiment of raising Hyacinths from bulbils, growing them on in nursery-beds, lifting them and storing them in a dry shed for the winter and removing the flower-spikes as soon as they open until the bulbs are full size, when they are planted in the flower-beds for spring effect. At the present time the whole of the large geometrical flower-garden in front of the great Palm-house is filled with about 10,000 Hyacinths, all in full blow, every one of which has been raised at Kew in from three to five years from bulbils. Samples of the spikes were exhibited before the Royal Horticultural Society last Tuesday, and they were generally admitted to be equal to those of Dutch origin. Of course, I do not mean by this to suggest anything beyond the fact that many people might find pleasure and satisfaction in growing for themselves bulbs which are now purchased annually and thrown away after they have flowered. From the commercial standpoint I question if it would ever be possible to produce in England bulbs equal to those grown in Holland, and at the same time as cheap.

Australian Plants.—The greenhouses at Kew owe not a little of their charm at this time of year (April) to the various Australian hard-wooded plants, so called, which have received special attention at Kew during the last few years. The most noteworthy are the Acacias, to which I

have previously referred, the Chorizemas, Pimelias, especially P. Nieppergiana and P. spectabilis, the latter a charming pot-plant, with many branches, every one terminated by a head of creamy white flowers as large as a crown-piece. Pultenœa flexilis is a bush, eight feet high and as many across, with branches most elegant and graceful, the whole so thickly studded with bright yellow pea-like flowers as to suggest a cloud. This is planted out in a peat-bed, and I know of no shrub, indoors or out, that surpasses it. Close to it is a large bush of the allied Eutaxia myrtifolia and another of Aotus gracillima, whose long wand-like branches, clothed with yellow and brown flowers, are a delightful feature. The white orange-like flowers of the various Eriostemons, the elegant, brightly colored Epacris, and the white star-like flowers of the graceful Leptospermums, with the rosy bells of Baucria rubioides, are all such as arrest attention and win general admiration. The brilliant Boronia heterophylla, grandest of all Boronias, is now worth going a long way to see. These, and many others which one might mention, are first-rate garden-plants when well grown, far more attractive in every way than hosts of the things which are in general favor.

Peat, plenty of sunshine and air, with the exclusion of cold and damp in winter, are the principal factors in the production of good specimens of hard-wooded plants for the greenhouse, such as those mentioned above.

London. *W. Watson.*

Cultural Department.

The Cultivation of Ginseng.

THERE was a touch of pathos in a remark I heard from a farmer's wife while rambling over the hills of Cortland County, New York, in quest of Ginseng. "It is a shame," said she, "that Ginseng is so hunted and stolen from our forests that we can hardly find a root for our own use." From Minnesota to Carolina the gathering has been carried on until in the places where this beautiful plant was once so abundant that one could hardly step without treading on it, only single roots can now be found. It is only a question of time when Ginseng, at the present rate of destruction, will be utterly exterminated from our forests. Last year more of the root was exported to China from this country by 80,000 pounds than was ever sent before in any single year, and notwithstanding the growing scarcity there are ten persons hunting for the roots now where there was one ten years ago. From early spring to late fall the Ginseng-hunter toils with his bag and spud through tangles of brush and brier, his day's labor often rewarded with only a few ounces of roots, while a more fortunate chance may give him as many pounds some other day. The hunt has been greatly stimulated by recent high prices, and there is, too, a fascination about the quest which is only known to those who engage in it.

Ginseng is one of the most beautiful plants found in our forest. Its form is symmetrical, its foliage is delicate and its seed-head is beautiful. It is often described as a fifteen-leaved plant, but it has really from three to twenty-five leaves, according to its age and vigor. In central and northern New York it comes out of the ground about the first of May. The leaves attain their full size in June. The blossoms appear about the first of July, and are very small and delicate, and under a magnifying-glass beautiful. The berries develop rapidly, and are light green until the 20th of August, when they commence to color; in September they are bright scarlet and make a very showy appearance. A large, vigorous, twenty-leaved plant may have as many as thirty or forty berries in a round compact ball on a slender stem from four to six inches in length, each berry containing from one to three hard rough seeds. The berries are round and elongated or triangular in shape, according to the number of seeds, and they are often as large as a small bean, and are meaty and pleasant to the taste. They fall to the ground soon after ripening and are covered by the falling leaves. But since one covering of leaves would not suffice to protect the delicate root as it first pushes from the seed, nature provides that the germ in the little seed shall patiently rest until another year has spread another covering of leaves over it. Then, after the snows of a second winter have rested upon the seeds and firmly imbedded them in their position, they awake from their sleep of eighteen months and send up a small plantlet about two inches high, with three leaves, and a root not larger the first season than a grain of wheat.

The plant grows slowly and attains a great age. Roots, thirty or even fifty years old, often weigh less than one ounce, and again they have been found weighing three and even six or eight ounces, though not nearly as old. How do we know the age? By the notches on the neck of the root. The plant keeps its own record, each year's growth adding to the length of the neck and leaving a notch where the stalk falls off. As the roots increase in age they assume strange and fantastic forms, so that it requires but little imagination to see the form of the human body in many of them.

Ginseng also grows in China. In his *Middle Kingdom* Williams says, "It is found wild in the forests of Manchuria, where it is collected by detachments of soldiers detailed for the purpose. These regions are regarded as imperial preserves, and the medicine is held as a Government monopoly. The importation of the American root does not interfere elsewhere with the imperial sales, as the Chinese are fully convinced that their plants are superior." The root has been exported to China from this country for more than a hundred years. At first it was bought of the Indians at $2.00 a bushel for green roots. Within the last few years local dealers have paid as high as $1.15 for a pound of green roots, while the dry root has sold as high as $4.25 in New York. But for the foreign demand it would not be worth more than five cents a pound here, and our forests would soon be filled with the plant. It is sometimes sold for its weight in gold in China, and at other times for its weight in silver, according to its supply and demand. A single root having the form of the human body may bring from $2.00 to $4.00. In the *Oil, Paint and Drug Reporter* for May, 1889, it is said: "An example of the cost of this medicinal root is afforded by a recent *Pekin Gazette*, which contains a report from the Military Governor of Kirin, stating that he has forwarded by special messenger for the Emperor's use eight large and sixteen small roots weighing together nine and four-tenths ounces. The total cost is given as 1,560 taels, or about £400, being at the rate of £45 an ounce." The Chinese do not base their estimate of its value upon chemical analysis of the root, but they reason that a root which attains such extreme age and so resembles the human form must possess supernatural power, and that therefore it is capable of imparting its virtue to the human body; hence if they eat such roots they will ward off disease and prolong their lives to extreme old age.

It is the general opinion in this country that the plant cannot be successfully cultivated. In 1891, while attending the State Fair with an exhibit of Ginseng, I was told by more than a hundred people that they had tried to cultivate the plant by setting roots and sowing the seed, but that it never grew. And this was my own experience at first. My first sowing of seed did not produce a plant. Two hundred roots which I put into the ground in 1886 made little growth the first year, and the outlook was so unfavorable that I abandoned the business. In 1887 I put in some roots and sowed some seeds, and the next year my plants made a better showing. I then commenced to study the habits and characteristics of the plant, and, with the experience gained, my success has been complete. I had thousands of fine plants growing on my ground in 1891. Many roots can be grown in a small space, and although the growth on each one during the season is small, yet the aggregate is considerable. The plant will grow much more rapidly under cultivation than it will wild, and it therefore seems destined to become an important agricultural product. The seed alone will pay for the expense of cultivation, and there will soon be a demand for all there can be produced. The Legislature of Ontario, by its recent action in passing the law to prohibit the digging of roots between the 1st of January and the 1st of September, has taken a step in the right direction, and it would be well if our state legislatures would pass similar acts for the protection of the wild plants in this country.

There is a general impression that our Ginseng may be grown in the forest, but that it cannot be successfully cultivated in the open garden or field. Of course the forest is the natural home, and when it is once established in the woods it will require but little care or attention. The only danger would be in protecting the crop. Ginseng, along with other medicinal roots growing wild, is by common consent regarded as free plunder, and the average Ginseng-hunter would hardly have so fine a sense of honor as to discriminate between the wild and cultivated plants. In the forest any light soil will answer, so long as it is not wet or swampy. All that is necessary is to place the seeds or roots in the ground, and nature will do the rest if time is given. My own operations have

been in the open garden. Small roots may be set three inches each way, and seed may be started much closer and transplanted in two or three years. Experience will show the best method of shading. I have found that shade of some kind is essential. All that is needed, then, is weeding and careful cultivation. From an area measuring forty-feet in length by three feet in width I lately took 570 roots, weighing 18 lbs. 14 oz.; 343 of these were small, and weighed together 5 lbs. 7 oz., which I reset. The remainder weighed, when dried for market, 4 lbs. 12 oz., for which I received $16.83, besides fifteen ounces of seed, for which I have a ready sale at $1.00 an ounce. Of course there is much to be learned as to the best methods of planting and cultivation, but the cultivated root is firmer and shrinks less in drying than the wild article. In my opinion the growing of the plant can be made profitable, even if the root does not bring more than $2.00 a pound.

Summit Station, N. Y. *G. Stanton.*

Fig. 41.—Leaf attacked by Nematodes.

Foliar Nematodes.

THE most striking instance of eel-worms destroying the leaves of plants which has come to my notice was seen on specimens of Ficus comosa. When first observed nearly all the leaves were badly blotched, and several of the lower ones had fallen away. Upon the upper side the leaves have a bronzed appearance, while the lower side is brown and somewhat rusty in color. As has been heretofore observed in Coleus and Salvia, the nematodes do not destroy the life of the leaf-pulp uniformly, but, instead, ruin it in spots that are decidedly angular in outline, the boundaries corresponding to the veins of the leaf. In the worst cases the whole leaf may become brown and dead. The engraving illustrates the appearance of a leaf that is attacked to only a moderate degree, and was selected for the photographs on this account. It will be noticed that the diseased area is the central portion of the leaf, and its position leads one to wonder if the worms may not have come up from the soil or roots through the stem and leaf-stalk. This seems to be the case with young Ferns afflicted in a similar manner and recently studied. To cure such leaves seems out of the question, and what to do as a preventive is not easy to suggest. Some one with a fondness for life-histories of nematodes might well devote much time to the answering of many practical questions concerning these foliar eel-worms.

Rutgers College. *Byron D. Halsted.*

Euphorbia Jacquiniæflora.

THIS plant, a very old inhabitant of our greenhouses, is more correctly known as E. fulgens, but to the present generation of gardeners it will be the more familiar by the old name. Like E. pulcherrima, which is also better known as Poinsettia, it is a native of Mexico, and both are naturalized in Florida in the Orange belt, and make a gorgeous display at Christmas-time out-of-doors. It is well known that it is the colored bracts of the Poinsettia which make it so conspicuous, but in its near relative it is the flowers themselves that are ornamental. These are produced in short axillary racemes at the extremities of the shoots, and the quantity of flowers depends entirely on the strength of the shoots. For this reason we prefer to grow the plants on quickly to a single stem, not pinching the tops out at all, as one good stout spray twelve to eighteen inches in length studded with bright orange-scarlet flowers is much preferable for cutting purposes to smaller sprays, even if more numerous. Under pot-culture, E. Jacquiniæflora has a rather bad reputation, it being somewhat liable to die off just above the soil. Too much or too little water will produce this result, but we find that when planted out in benches in an ordinary Rose-house temperature a vigorous healthy growth can be obtained, with very little danger from the trouble referred to, with an abundance of bloom at a season when cut flowers are in great demand. Another feature of this plant is, that the flowers will be produced on the plants in succession for more than two months, so that there is no trouble in saving them for any special purpose or occasion. It is well known that Poinsettias wilt badly when cut and put in water, but if cut and the whole stems submerged in water, and the bracts allowed to float for about twenty-four hours, this difficulty may be entirely overcome, and the same treatment can be given to the Euphorbia. This was discovered quite by accident, when a lot of wilted branches of Poinsettias were placed in a bath-tub to preserve the bracts; the stems are capable of absorbing a quantity of water and storing it for use. We find Euphorbias root easily when the young shoots are taken off close to the old stems, or "with a heel," as it is termed by propagators. These are potted up when rooted, and grown on into four-inch pots, and from these transferred to their permanent places in benches wherever there is root-room. The growth made is somewhat slender, and does not shade or otherwise interfere with other occupants of the house or benches, and the temperature and soil of a Rose-house suit them admirably.

South Lancaster, Mass. *O. O.*

Notes on Species of Tulips.

DURING the last twenty years many species of Tulips have been re-introduced into cultivation, principally through the exertions of Dr. Regel, of St. Petersburg; they are interesting, and vary in the form and color of the flowers, and some are quite new in gardens. Tulipa Batalini produces exquisitely shaped flowers, straw-colored in one form and deep scarlet in another; the flowers are of medium size, but beautifully proportioned. T. Korolkowi marginata is an early-flowering species, with small but well-shaped, brilliantly colored flowers, the segments deep scarlet and margined by a broad band of brilliant yellow. T. Kaufmani is one of the earliest-blooming species, or perhaps the earliest. There are two forms: one with flowers straw-colored inside and rose or purple outside, and the other with flowers golden yellow, blotched with bright scarlet. Bright red outside and straw-colored within are the flowers of T. Leichtlini, introduced by myself from Cashmere. This is a rather dwarf, small-

flowered species, but is attractive. T. Greigii, a species with large, bold, brilliantly colored flowers, is already well known. The largest-flowering Tulip I know is T. oculis solis, var. mervensis, a peculiarly stately plant, with scarlet flowers blotched with black. T. Turkistanica is a curiosity, producing sometimes as many as nine flowers on a single scape; they are white and yellow within and mauve without. T. Alberti, T. lanata, T. Kesselringii, and T. Eichleri are well worth cultivation. In mediæval times many of these Tulips were brought to Constantinople to the Caliph's garden, and from there were sent to Holland, where they were used in the production of garden hybrids and ultimately lost in their original forms.

It is evident that the next ten years will give us more new and beautiful type forms of Tulips than the last twenty-five years have done, as importations of plants from Armenia and Persia are now far in excess of anything known before; and a vast field is now open for the systematic crossing of the different species, or of the species with the best forms of garden Tulips. According to my experience with these plants, the female parent gives the form to the offspring.

Baden-Baden. *Max Leichtlin.*

Seasonable Work.

THE plant-grower at this season is burdened with pressing work of many kinds. The plants intended for bedding out will naturally be among the first to be attended to, for most of them will be required during the next two or three weeks (at least in this latitude), and to prevent any check in growth after they are planted out they should be properly hardened off by abundant ventilation if they are kept in the greenhouse. The better plan is to place them in a cold frame, if such a convenience is at hand. With tender kinds, such as Coleus, Alternantheras, Acalyphas, Crotons, Musas and other plants of succulent growth, nothing is gained by very early planting, for the check thus given frequently results in permanent injury, and to avoid this it is wiser to keep such plants where they can be protected until the third week of May or even the first of June in exposed locations in the middle states.

The many good qualities of Crotons and Acalyphas as bedding-plants should not be forgotten, for the rich effects produced by them cannot be easily surpassed by any others. Tuberous Begonias, too, ought to be largely used, and in appropriate locations they will prove among the most showy of outdoor flowering plants. These should be grown into sturdy specimens before being planted out, for though the tubers may be planted while dormant and prove successful in some cases, yet a more even bed will be secured by the use of well-established plants, and the season of flowering will then extend from the time of planting out until frost comes in the fall.

In the greenhouse, also, there are many things to be provided for in order to keep up a constant display. For instance, the Gloxinias, Gesneras, Achimenes and Tydæas are all valuable for summer decoration of a conservatory, and will all need liberal treatment now, such as sufficient pot-room, good drainage, a fresh light soil, enriched with liberal supplies of thoroughly rotted cow-manure.

All plants of this character should have plenty of room for the best development of their foliage; the Gloxinias especially need this precaution, and as the leaves frequently become a foot or more in length under good cultivation, the plants may need lifting up on an inverted pot to keep the foliage clear of the bench. Some of the Tuberous Begonias are excellent pot-plants for conservatory decoration, among these being B. Boliviensis, B. Sutherlandii, B. Chelsonii and B. Frœbelii, all of which are worthy of more attention, and they should now be nicely started.

Caladiums also should now be started, and as soon as they become established will require an abundance of moisture both at the root and in the atmosphere to develop their finest foliage, and when the pots become well filled with roots a top-dressing of manure and also watering with liquid fertilizer will be beneficial, for Caladiums are gross feeders, and can assimilate large quantities of stimulating food. The Alocasias should now be in active growth, and, like all of the Arum family, enjoy plenty of moisture when in that condition. Light potting is best for these plants, and especially for the tenderer species, like A. Sanderiana, A. intermedia, A. Sedenii and others, and in all cases thorough drainage is essential. Seedling Cyclamens for next winter's flowering should now be ready for a shift from the small pots in which they have been potted off into those of three or four inch size, and these plants also should not have the soil pressed too hard into the pots, and should have a light open compost in which may be included some pulverized brick. An airy location, with plenty of light, is necessary to insure a sturdy growth of good foliage on Cyclamen Persicum, and when such growth is secured there is seldom any difficulty in getting a good crop of flowers.

Pot Chrysanthemums for next fall will also need attention now, a steady growth being most desirable, and an essential point in securing this is to avoid all extremes in watering.

Holmesburg, Pa. *W. H. Taplin.*

How Some Half-hardy Shrubs Survived the Winter.

NO winter, however mild or cold, passes without leaving some marked effects on the arborescent vegetation, some of which are often least expected. It is never safe to predict just in what condition any of our half-hardy trees or shrubs will come through a particular winter, because the injuries are not proportionate with the degrees of temperature registered by the thermometer. The condition of the plant when the period of rest begins in the autumn is a powerful factor in determining how much vitality there will remain in the spring, and usually sudden opposite changes in temperature are more injurious than extreme weather if uniformly cold. The past winter was, on the whole, probably a little colder than the two preceding in the vicinity of Boston. But at no time did the temperature fall much below zero of Fahrenheit, and although the ground was bare a large part of the time, there was more snow than in either of the previous seasons.

A look now over the collections of shrubs here plainly shows to what extent any of them sustained injury. Rhododendrons and Azaleas have wintered remarkably well, and very few buds show signs of injury. Even such uncertain species as R. Dauricum and R. mucronulatum, notable for their extremely early flowers, have blossomed better than usual. Daphne Cneorum, with the slight protection of leaves which it usually requires, appears in fine condition, although no doubt there are exposures where it has suffered. Plants of D. Mezereum covered with soil, and others beside them left quite unprotected, showed that there was little or no advantage this season in covering, for the unprotected plants are in quite as fine condition as the others, although the flower-buds may have been more injured by spring frosts because they developed earlier.

A Japanese Ilex, I. Sieboldi, also came through the winter in better condition by being left uncovered than closely adjoining plants of the same species which were carefully bent over and covered with soil. Some of the tips of the protected plants have an unhealthy appearance or are dead, and appear as though they had heated in the soil, whereas the unprotected plants are perfectly sound and healthy to the last bud.

The pretty-flowered Corylopsis pauciflora, from Japan, may be found hardy in some situations about Boston, but as it is placed in the Arboretum it does not generally survive the winters well without some sort of shelter. It forms a slender many-stemmed bushy shrub. Last autumn one-half of the stems of the plant were bent downward and covered with soil, the other half left exposed. As a result the half of the plant which was protected is now (May 4th) well laden with a profusion of its beautiful straw-colored flowers, while the ends of the shoots of the unprotected portion are nearly all dead, a large proportion of the buds are destroyed, and only a very few straggling blossoms have developed, chiefly on the lower portions of the stems.

Ribes sanguineum is another pretty plant whose branches, in this latitude, it is well to cover if good blooms are desired. Repeated experiments, similar to that with the Corylopsis, have shown the need and advantage of protection, and as the stems bear bending very well it is an easy matter to peg them down and cover with soil. By treating Gordonia Altamaha in the same way we are able, late in the autumn, to get some of the beautiful white single Camellia-like flowers from this southern plant.

Stephanandra flexuosa, not long since introduced from Japan, did not give promise of much hardiness when first planted in the Arboretum, but it is now well established, is about six feet high, and its buds on most of the stems appear fresh and living almost to the tips. The plant had no protection whatever during the winter.

Repeated attempts prove that, as a rule, there is not much satisfaction to be had in attempting to grow the different forms of Hydrangea hortensis in the open air here, if the object is to raise the flowers. In spite of heavy coverings the stems annually die to such an extent that no blossoms are produced.

The different common species and forms of Tamarix have come through the winter in first-rate order. Very often the ends of the branches are destroyed. The European "Gorse"

(Ulex Europæus) and Broom (Cytisus scoparius) suffered in spite of heavy covering. Neither of them is reliably hardy in this latitude and climate, although they thrive in the extreme south-eastern part of Massachusetts.

The Heaths, too (Erica and Calluna), do not always come through the winters unscathed, and even when afforded some covering a portion of the branches of Calluna vulgaris will sometimes turn brown. This observation is made of plants in cultivation; perhaps in thoroughly congenial situations of soil and moisture they would make a better showing. But even with a partial loss of stems, enough usually remains to produce a good show of flowers to encourage the cultivator.

Arnold Arboretum. *J. G. Jack.*

Correspondence.

Spring in Boston—A Foreigner's Impressions.

To the Editor of Garden and Forest:

Sir,—Spring came with a burst to Boston this year, as it has done a good many years, I fancy, only I have not been there to notice it. It was all new to me, and the perpetual changes in the weather were in themselves a never-failing source of interest. Watching these changes and wondering what might come next was like studying the moods of a wayward and delightful woman, whose occasional sullenness was more than compensated for by the brilliancy of her smiles, when that humor seized her, or by her impulses of stimulating breeziness. I kept a weather-journal for a while, but it took too much time even if I had been able to remember all the changes that took place when I was away from my note-book for a few hours. All of a sudden, just as I was beginning to tire of my charmer, the sovereign change came; spring was here and obliterated the very memory of all that had gone before. Spring came, with warm soft breezes that irresistibly suggested visions of southern climes, and yet helped the sunshine to fill the heart with contentment. Spring came, and with it the joy of the first sparkle of living green on the lawns of the Public Garden, the first Crocuses in sheltered places along Beacon Street. Now the whole procession of spring flowers would be coming to light up the town gardens after the long gloom of winter.

Spring in town has a beauty of its own. It may not be comparable with that of spring in the country, for all the costly bulbs that ever came from Holland cannot produce flowers which give the pure joy of the sweet English Violets, or the small star-like Anemones that spread a delicate purplish blue carpet over sunny slopes in our Swedish woods, or of the gorgeous Italian Anemones, handsome, frank and pure as a Tuscan mountain-girl. But spring in town has a beauty of its own akin to the bright beauty of the treeless south, and duly felt by the Neapolitans, among whom some of the lost Italian color-sense still lingers when they deck their fruit-stalls and fish-venders' carts with flowers in the bright colors and harmonious combinations that the glorious sunshine calls for. The call is almost as strong here in New England, and just as strong out of town as in it—witness the intense green of the Flags and the joyous note of accordance with Nature that they strike. Only in the country there are also the woods, with their broken interlaced shadows and drifted heaps of fawn-colored leaves, their expectant quietness and cold suggestive corners. In town we have nothing but unmitigated sunlight, intensified by reflection from long lines of brick walls, sharply defined house-shadow, spring dresses, bright sunshades, gay colors in shop-windows, and glittering expanses of emerald grass in plots and squares and public gardens. I do not say that there is not room for the still small voice of Violets and shady cool corners in town, too; but on the whole I think the special spring beauty of town gardens, as of fields, is mainly to be sought in brilliancy. Fortunately, Nature has provided for this, and given the artist-gardener a working palette of the most splendid colors—colors which in summer would perhaps seem garish to some tastes, but which in spring, after the long starvation of the winter, only seem to satisfy a natural craving of the eye, and afford invaluable opportunities for the education of the color-sense. Everything is educational nowadays, and such public functionaries as curators of museums and superintendents of public gardens are not always to be envied. While the democratic principle demands that they should make their collections or gardens useful for practical study by the people who pay for them, socialistic thought has progressed far enough to demand that they should feel their responsibility as educators of the masses. Now, if there is anything that needs re-educating up to a lost standard, it is the color-sense in the great mass of people to-day, and the spring flowers offer splendid opportunities in this respect, both for strong masses and bands and splashes of pure color, represented by the Tulips, and for soft and delicate harmonies of tint and tone, furnished by the Hyacinths, so like soft uncut velvet in their first fresh texture. I have often thought that it would be well to let a French milliner with real taste be consulted about the arrangement of flower-beds, especially of Hyacinth-beds. Would that the Boston public gardener had called in a certain French milliner in Boylston Street for advice as to color-combinations! And why not? What is good in a bonnet is good in a flower-bed, and a flower-bed is a vastly more important thing than a bonnet.

My ardor of hope was a little damped when I saw that the Crocuses had been put into the lawns at regular intervals, making tedious diagonal and cross lines over the grass like the designs of certain wall-papers. Well, that was a mistake perhaps. I still ventured to hope for great things from the Tulips and Hyacinths, and made a special pilgrimage into town (I was in the country by that time) to see them.

Boston readers will appreciate my disappointment at the sight I saw. For readers out of Boston I will add that the bulbs seemed put in the ground haphazard, and that the only care exercised had been to get in as many as possible. As to color-schemes, harmonies, combinations, they were non-existent, or, at least, incomprehensible. No wonder that the ladies prefer to go to Madame O.'s plate-glass windows for their coloristic education. There was nothing educational in the bulb-beds of the Public Garden. They showed a jumble so characterless, so confused, that I could not even stop to notice the infelicitous combinations, as a warning against ever trying them again. I simply hurried on in sorrow, and now can only remember a profusion of pale mauve Hyacinths just where they ought not to be, dominating the patternless mosaic of other tints in a way that made them seem almost vulgar.

. . . . . .

After my first impressions were in type I went into town for a second look, so that I might see the full glory of the Tulips. The Tulips were better, and some of the combinations were excellent, such as a blaze of red set off by a band of white or a field of pink, framed in a deeper rose. Some little arrangements were almost as attractive as if the French milliner's dainty taste had been consulted, as, for example, little round plots of golden white Tulips set on dark Pansies. But there were exceptions. The artist, as a rule, seems to have been controlled by the notion that a mass of Tulips in one tint or shade, set off by a border of Tulips in another and planted in a thick bed of Pansies of any color, could not help being beautiful. In some cases the result was happy, although even the little plot of white Tulips and Pansies I have mentioned would have been more effective if the Pansies had been allowed to broaden out into a border, so as to make a setting of a deep velvety tone around the bright centre of the Tulips. In other cases the result was painful—a combination of two discordant reds, for instance, or a good Tulip scheme in rose spoiled by the introduction of a bed of washed-out violet Pansies creeping between the stems.

The effect of the whole, too, was disturbing. I do not feel at all certain that the laying out of the beds is the best possible one. But given this arrangement of large flat beds, so near each other as if they belonged together, of course they ought to have been treated accordingly, and one combination ought to have led up to, or set off, the next one, and in the arrangement of the whole, which is taken in at one glance of the eye, a clear, well-thought out scheme of harmony ought to have made itself felt. Here was an opportunity for showing that the gardener is, after all, an artist of higher rank than the milliner. The Lord of Misrule had it all his own way, while the prominent note, badly introduced, was the fashionable shade of deep solferino, which requires very careful treatment to be used at all.

Milton, Mass. *C. Waern.*

Bird's-foot Violets in Cultivation.

To the Editor of Garden and Forest:

Sir,—The communication from your Missouri contributor, entitled "Wild Flowers in Cultivation," in Garden and Forest for April 6th, suggests an experience of my own in the cultivation of Viola pedata bicolor which may have interest for others.

In the early spring of 1887 I drove from Washington with a friend to Arlington Heights. The road-side, as we ascended from the river-bank, was decked with early flowers, and as we came to the foot of a long hill, up which we were to climb, the entire slope, from top to bottom, was aglow with the va-

riety of V. pedata called in Washington "Wild Pansy." We had never seen it before, and the flower, with its two upper petals of velvety royal purple, seemed singularly beautiful. When we reached the Pansy-hill on our return a temptation too great to be resisted was before us. We were not prepared for gardening, but, taking off our gloves, we grubbed up the Violet-roots, which fortunately came up easily, until our pocket-handkerchiefs were filled with them. On getting back to the city we packed the roots carefully and sent them to be planted in the garden at home.

When I arrived at home, the 1st of June, the Violets were blooming in the garden, and continued to bloom at intervals all summer long. The plants were still covered with buds when the first frosts came and nipped them. Having many fears lest the cold winter should prove fatal to these natives of a warmer latitude I covered them with leaves; but when the spring came round again and the plants were uncovered, they at once began to put forth fresh leaves and flower-buds and came into bloom the 1st of May.

They are still prospering in my sunny garden, which has a sandy soil well suited to Violets. In rainy seasons they blossom all through the summer until the frost chills them in the autumn. In dry seasons there are few flowers after the profuse bloom of May until September, when they bloom nearly as freely as in the spring. The flowers are larger and handsomer than they were when the plants were first placed in the garden, and many of the lower petals are freaked with royal purple. There is no Pansy-bed near my Violets, and hybridization cannot cause the markings, for they occur on the blossoms of the original plants.

Cambridge, Mass. *Caroline A. Farley.*

Recent Publications.

A Handbook of West American Cone-bearers: Approved English names, with brief popular descriptions of the Cone-bearing Trees of the Pacific coast, north of Mexico and west of the Rocky Mountains. By J. G. Lemmon, San Francisco. 1892.

Mr. Lemmon has devoted himself of late years to a careful study of the cone-bearing trees of the Pacific states, and in the present handbook he makes an appeal "to botanists, naturalists, school superintendents and teachers, lumbermen, travelers, and tree-lovers generally," for fixed vernacular names for these trees, urging them "to ignore senseless inappropriate names for our trees, and to insist upon suitable descriptive distinguishing names, and to have only one name for each kind of tree," which he rightly considers should be taken up by the public and made the popular name. "I am not now advocating," he remarks, "the popular use of the scientific names; that will come in due time. The youth of America will soon be ashamed not to be familiar with our principal botanical names as with household words. It will be admitted that the only really distinguishing names are those conferred and duly published by scientists having full knowledge of the subject and its relations. These are the technical names—those of last resort—for they alone may infallibly distinguish any object in nature.

"Such names, of course, are written in Latin, but they may be understood by the learned of all nations. A person often hesitates about using them, ignorant perhaps of their proper pronunciation, and dreading the burden he fears they may impose on his memory. The coining of vernacular names is a very different matter, and such names are often a matter of chance, and too frequently made without a full knowledge." As an example of this, Mr. Lemmon points to the fact that "in one short range of California mountains there are seven different species of Pine. Four of these Pines are called by the same name, and that the meaningless one, 'Bull Pine.' Now, one of these species, Pinus Coulteri, bears the largest and heaviest cones in the world, a single cone often weighing five to eight pounds. What better name for this tree than 'Big Cone Pine?' A second, P. Sabiniana, has pea-green or grayish foliage, distinguishing the trees from others at a distance. 'Gray-leaved Pine' is suggested for this tree. The third species, P. Jeffreyii, has dark, often black, bark, finely checkered, in strong contrast with light-colored, well-known Yellow Pine (P. ponderosa), with which it is often associated. What better name," Mr. Lemmon asks, "for this tree than 'Black Pine'?" He then submits what he considers the most appropriate and best vernacular names for the different coniferous trees of his region in the hope that they will, by this useful publication, become familiar to the public, and so gradually established. We are glad to publish in this connection his names, in the hope of aiding him to bring about a most desirable reform.

P. Lambertiana he would call "the Great Sugar Pine"; P. monticola, "the Little Sugar Pine"; P. Ayacahuite, var. strobiformis, "the Arizona White Pine." For P. flexuosa and P. albicaulis he suggests "Rocky Mountain White Pine" and "Alpine White Bark Pine," although this last, it seems to us, would be sufficiently well designated by the shorter name of "White Bark Pine." P. Balfouriana is appropriately called "Fox-tail Pine," the name by which it has been known for many years; and P. aristata is here called "Bristle-cone Pine."

Of the Nut Pines, P. monophylla is called "Nevada Nut Pine," although the species is not confined to the state of Nevada. P. Parryana is called "Parry Nut Pine"; P. edulis, "New Mexican Piñon," although New Mexico is not the exclusive home of this species; and P. cembroides, "the Stone-seed Mexican Piñon," a rather unnecessarily long and awkward name. P. contorta is called "the North-coast Scrub Pine"; perhaps "Contorted Pine" would be as good a designation. P. Murrayana is called "Tamarack Pine," the name by which the species, from a fancied resemblance to the Tamarack of eastern swamps, is universally known to travelers in the high Sierras. P. ponderosa is called "Western Yellow Pine," and P. Jeffreyii "Western Black Pine," the variety of the high Sierras being called "the Sierra Red-bark Pine," and that of Lower California, recently portrayed in this journal, "Peninsula Black Pine." Upon P. Arizonica is bestowed the somewhat awkward name of "Arizona Five-leaved Lumber Pine," a particularly unfortunate designation, as the leaves are not always in fives and the species does not produce especially valuable lumber. P. latifolia is called "the Arizona Broad-leaved Lumber Pine," and P. Chihuahua "the Chihuahua Top-cone Pine." P. Torreyana is appropriately called "the Torrey Pine"; P. tuberculata, "the Monterey Pine," and P. attenuata (of Lemmon), until recently known as P. tuberculata, the "Narrow-cone Pine." P. muricata is called "the Prickly-cone Pine," and P. Banksiana, which Mr. Lemmon reports from the Selkirk mountains in British Columbia, "the Canada Horn-cone Pine," a name which certainly is not more appropriate or easier to fix in the memory than "Gray Pine," by which this species is almost universally known in Canada.

For the Firs, whose identity and synonymy are more confused than the trees of any other group of western American conifers, Mr. Lemmon suggests that Abies amabilis shall be called "the Lovely Red Fir"; A. nobilis, "the Feather-cone Red Fir," a name which seems to us inappropriate; A. magnifica, "the California Red Fir," and A. religiosa, "the Mexican Sacred Fir." A. lasiocarpa appears as "the Downy-cone Subalpine Fir"; A. grandis, "the Oregon White Fir"; A. Lowiana, "the California White Fir"; A. concolor, "the Colorado White Fir," and A. venusta, "the Bristle-cone Fir."

It hardly seems necessary to designate Sequoia sempervirens as "the Coast Redwood," as it is the only California conifer called Redwood, or to call Sequoia gigantea "Giant Sequoia." To our taste "Big Tree" is a simpler and better name. For Thuya gigantea, "Pacific Red Cedar" is proposed, and for Libocedrous decurrens "California Post Cedar." Chamæcypris Nutkaensis is called "Alaska Ground Cypress," but as this tree sometimes attains a height of one hundred feet and is by no means confined to Alaska, this name will hardly find general acceptance.

Cupressus Arizonica is considered distinct by Mr. Lemmon from the species of Guadaloupe Island (C. Guadalupensis, Watson), and is here given the name of "Arizona Red-bark Cypress," but as it is the only species known to grow in that territory perhaps "Arizona Cypress" would sufficiently designate it. Nor do we like "North-coast Cypress" for C. Goveniana, as the species is found as far south as the shores of the Bay of Monterey, or "California Mountain Cypress" for C. Macnabiana—a rare and local species which grows on the foot-hills rather than on the mountains. Taxus brevifolia is called "Pacific Yew"—a good name, although no better than the one by which it is usually designated in books, "Western Yew."

Mr. Lemmon, following Professor Greene, discards Torreya and adopts the earlier Tuminon of Rafinesque for the California representative of a genus known in Florida, where one species also occurs, by the vernacular name of Torreya; and as this is now a well-established name we venture to suggest, whether Tuminon be universally adopted by botanists or not, that the California tree be called "the California Torreya" rather than "the California False Nutmeg," as is here suggested.

Such criticisms as these which we have ventured upon show the difficulty of fixing on any plant a vernacular name which will be acceptable to every one, and will serve, perhaps, to emphasize the fact that the best name for any plant is the Latin name which is given to it in accordance with a fixed and

recognized principle, and which cannot be changed except in accordance with that principle.

We are glad to see, from a notice printed at the end of Mr. Lemmon's interesting paper, that correctly labeled specimens of branches, cones, foliage, etc., of the Pacific-coast conifers can be supplied by him to museums and educational institutions at reasonable rates. His address is 1015 Clay Street, Oakland, California.

Notes.

Next year will see the tricentennial celebration of the formation of a botanical garden and the establishment of a professorship of botany in the city of Montpelier, and this event is to be appropriately celebrated there by a special session of the Botanical Society of France.

The Hard Maple of Maine furnishes a large part of the material used in the manufacture of shoe-pegs, although the wood of the Canoe Birch is sometimes used for this purpose. Shoe-pegs are sold by the bushel, and now range from seventy-five cents to one dollar a bushel, $150,000 having been received, it is stated by a correspondent of *The Manufacturer and Builder* of this city, last year by the Maine shoe-peg factories.

We learn that the necessary steps have been taken for the formation of an American Rose Society, and it is to be hoped that this will prove a vigorous organization. It is a singular fact that the Rose receives less attention in this country than it does in many others, and there is no good reason why we should not have a flourishing Rose Society, since the growers of Chrysanthemums and Carnations have both found such associations necessary.

Cratægus mollis, which is illustrated on another page of this issue, is now in full flower in this latitude. In Central Park there are many specimens of this Hawthorn which are twenty feet high or more, and their white blossoms, appearing abundantly among the tender young foliage, make a charming picture. It is not too much to say that at this moment these trees are quite as beautiful as any in the park, which is saying a great deal, when it is remembered that both the Chinese and American Red-buds are in full bloom, the flowers of the Sassafras are just opening, and the Flowering Dogwood is almost at its best.

A large part of the spools used in this country for winding thread are produced in Oxford County, Maine, and are made from the wood of the Canoe Birch (Betula papyrifera), although there are in western Maine several other important centres of this industry which occupy many saw-mills engaged throughout the year in sawing up Birch-logs into strips four feet long and an inch or two inches square. These strips are worked up in the spool-factories by most ingenious labor-saving machinery, the wood being fed into one machine, and hardly seen again until it drops from another in the form of spools ready for market, except the polishing, which is done by rapidly revolving them in barrels. In some villages of Oxford County nearly every inhabitant is more or less directly interested in spool-making, and in Maine several hundred thousand feet of Birch-lumber, which a few years ago was considered almost worthless, is now being manufactured into spools.

At the April meeting of the California State Floral Society, held in San Francisco on the 8th of that month, Mr. E. D. Sturtevant presented an interesting paper on aquatic plants and water-gardening for California, which, although considered a dry country, and therefore not favorable for the cultivation of water-plants, is well supplied, at least in the cities, with water. Natural ponds and lakes are rare, although a few exist in some parts of the state, and are suitable for the naturalization of the Lotus, a feat which has already been successfully accomplished in a laguna not far from San Diego, and irrigating ditches afford ample opportunities for supplying a garden with water. In all of central and southern California, the Lotus, of course, would be hardy, and in the southern part of the state, no doubt, all the species which are grown under glass at the east could be kept over winter without protection.

From the third annual report of the Missouri Botanical Garden Professor Trelease has recently reprinted his monograph of the species of Rumex occurring north of Mexico. Nineteen species are described, and the paper is enriched by twenty-one carefully drawn plates with analyses. Of the North American species one is a so-called Ballast-plant—that is, it is found only on heaps of ballast discharged from vessels arriving from foreign ports; seven others are Old World weeds; two are Arctic alpine plants of wide distribution, and eleven belong to the true North American Flora. "The chief biological interest in the genus," Professor Trelease points out, "comes from the acidity of the Sorrels and some Docks, and the occurrence of tannin and a bitter principle in some others; their protandary and exclusive adaptation to wind pollenization, and the adaptation of the greater number of species to wind dissemination by the enlargement of the inner segments of the perianth during ripening"—a peculiarity which accounts for their prevalence in cultivated ground, where they are often exceedingly troublesome weeds.

A series of fifteen lectures and field-meetings are to be held at the Arnold Arboretum during May and June for studying the trees and shrubs which grow in New England. They will be conducted by Mr. J. G. Jack, and will be held on Saturday mornings and Wednesday afternoons. The lectures will be given in the Bussey Institute, after which the class will visit the plantations and nurseries of the Arboretum for an informal study of the plants which have been under review at the lecture. The instructions will not be technical, since it is the intention to indicate by comparison the easiest means of distinguishing our common native shrubs and trees and of recognizing foreign species which have been introduced into our gardens. The ornamental and useful properties of trees and shrubs, their habits of growth, their peculiarities and common diseases will be considered, and the different plants will be taken up as far as possible in course as they become conspicuous in flowering. An autumn course of fifteen meetings will also be given, when an opportunity will be afforded for studying many of the trees and shrubs in fruit with their autumn foliage and their buds and general appearance as they prepare for winter.

In our issue for April 13th Colonel Pearson wrote that where his orchard-trees had suffered from sun-scald they were all flat-footed—that is, they had no tap-roots—and on examining the trees which had escaped the damage he found that all of them had roots which reached deeply into moist soil and sustained their vitality during surface droughts. Professor Budd quotes this paragraph in the *Iowa State Register*, and adds some examples as evidence to support the theory that sun-scald of the stem is often induced by lack of water-supply. Three years ago a Soft Maple on the Iowa Agricultural College grounds was severely pruned and its top was cut back. That season the southern half of the tree sun-scalded badly, and it is alive now only on the north side. Professor Budd has often examined sun-scalded forest-trees, and found that in each case the roots have been injured by trampling stock, so that the soil was harder and drier than in the primitive forest. The comparative hardiness of original seedling Apple-trees, which stand where their tap-roots first penetrated the earth, and trees that are grown by root-grafting with cions taken from the top illustrate the probable truth of Mr. Pearson's theory, but do not prove it.

An English correspondent of the *Country Gentleman* writes that a leading London physician has just issued his annual plea for that much despised vegetable the Stinging Nettle (Urtica dioica). Since the plant has become to some extent naturalized in this country, it might be worth while for some adventurous cook to try its effect on American palates and stomachs. Here is what the physician says: "In early springtime, when sprouts and cabbages constitute the chief supply of greens, those who know the delicate value of common Stinging Nettle rejoice to find that in its hardy vigor it comes shooting up in sheltered nooks and corners almost the first among the common harbingers of spring. Its tender tops, juicy, crisp and delicate, may be cut one by one with scissors held in a gloved hand, and when a basketful is obtained—and this can often be gathered in a single corner where a heap of rubbish has been lying—a valuable and health-giving adjunct to a meal is possessed. The Nettles should be well washed, and this can be done by stirring them briskly round in a pail of water with a stick, or by putting them under a running tap, and then put into boiling water. In about a quarter of an hour their stinging power will have disappeared, and they will be like very delicate Turnip-tops. They may be served in many ways, but perhaps one which will be found specially palatable is to treat them like Spinach and serve them on toast with a poached or fried egg. If Londoners would only ask for nettles, nettles would soon be found in the market, and a vegetable which is now the farmers' and gardeners' pest would prove a source of profit. Nettles are especially valuable for their diuretic and antiscorbutic properties, and would be found far more helpful in purifying the blood than the concocted 'blood mixtures' so persistently puffed and widely used."